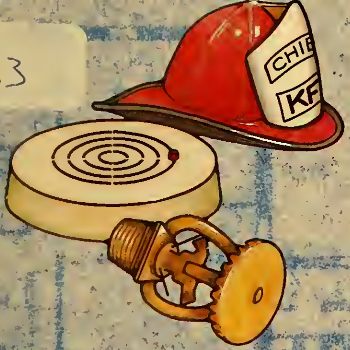
33



# AN OUNCE OF PREVENTION

NETCLAC40

*It's 3 a.m. in a highrise condominium in the United States. A common and deadly fire scenario is taking place.*

*A young man, after a night of partying, has dropped into a comfortable livingroom chair for a final beer and cigarette before tiptoeing to bed. He does not want to wake up his younger brothers and sisters, nor, in particular, his parents.*

*He dozes. The limply held cigarette falls from his hand.*

*An hour later, the smell of smoke barely penetrates his consciousness. He struggles against the weight of alcoholic sleep to open his eyes. Flames are beginning to engulf his chair and the nearby drapes. Feebly, frantically, he tries to rise—to warn them—to get away!*

*Then, suddenly, water begins shooting in a circular spray from a sprinkler head in the ceiling. The stairway smoke alarm begins to blare.*

*Within a few confusing, panic-filled minutes, the fire is extinguished. His parents are in the room. Someone is coughing. Sprinkler water continues to fall onto the scorched chair.*

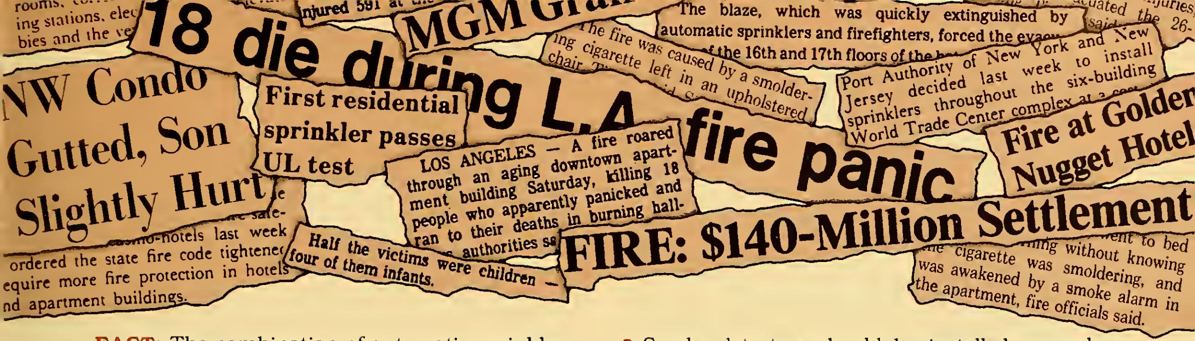
*It will be days before his parents' anger subsides. Weeks, perhaps, before he gets to go out on Friday night again. But eventually, he and his family will rejoice over this livingroom scene.*

*Property damage is minimal. And thanks to an automatic sprinkler system and a smoke detector, this family and other occupants in the building have escaped tragedy. In fact, it was not even necessary for the other families in the highrise to evacuate the building. Unlike most people in the same situation whose residences are unprotected, their names will not be added to the long list of U.S. fire fatalities and injuries.*

*This booklet shows how smoke detectors and automatic sprinklers can make your life safer at minimum expense.*

Federal Emergency
Management Agency

U.S. Fire Administration



ing stations, elec
bies and the

18 die during L.A. fire panic

injured 591

MGM

The blaze, which was quickly extinguished by automatic sprinklers and firefighters, forced the evac
the 16th and 17th floors of the

The fire was caused by a smoldering cigarette left in an upholstered chair.

Port Authority of New York and New Jersey decided last week to install sprinklers throughout the six-building World Trade Center complex

NW Condo Gutted, Son Slightly Hurt

First residential sprinkler passes UL test

LOS ANGELES — A fire roared through an aging downtown apartment building Saturday, killing 18 people who apparently panicked and ran to their deaths in burning hall-
authorities sa

Fire at Golden Nugget Hotel

FIRE: $140-Million Settlement

hotels last week ordered the state fire code tightened
equire more fire protection in hotels
nd apartment buildings.

Half the victims were children — four of them infants.

cigarette was smoldering, and was awakened by a smoke alarm in the apartment, fire officials said.

**FACT:** The combination of automatic sprinklers and early warning systems in all buildings and residences could reduce overall injuries, loss of life and property damage by at least 50 percent.

- In 1981 alone, fire . . .
  *Killed 7,600 people in the United States*
  *Injured 31,000 civilians and 56,000 firefighters in the United States*
  *Caused $6 billion in property damage*
- In 1981, residential fires accounted for . . .
  *80 percent of fire deaths*
  *65 percent of injuries*
  *46 percent of structural property loss*
- The victims have been disproportionately people unable to help themselves . . .
  *Children*
  *The elderly*
  *Those unable to escape on their own*

**FACT:** The most effective way to minimize threat from fire is to put a fire out while it is still small.

- Fire may smolder for hours before bursting into flame, but then consume an entire room in two minutes.
- U.S. Department of Energy reports no loss of life and greatly reduced property loss in 115 fires from 1952-1980 in sprinkler-protected facilities of all types.
- In 1,648 fires in New York City highrise buildings from 1969 to 1978, sprinklers were rated over 98 percent effective in suppressing and extinguishing fires.

**FACT:** Smoke detectors will reduce the chances of people dying in building fires by 50 percent.

- Smoke detectors should be installed on each level of buildings and residences.

**FACT:** Tests of newly developed quick-response sprinkler systems designed for use in residential buildings indicate that automatic sprinkler systems can effectively extinguish or control fires in fully sprinklered buildings.

- Sprinklers operate automatically when and where fires start.
- Sprinklers keep fires small.
- Sprinklers reduce the danger of burns and carbon monoxide poisoning in most cases by eliminating flame and production of smoke.

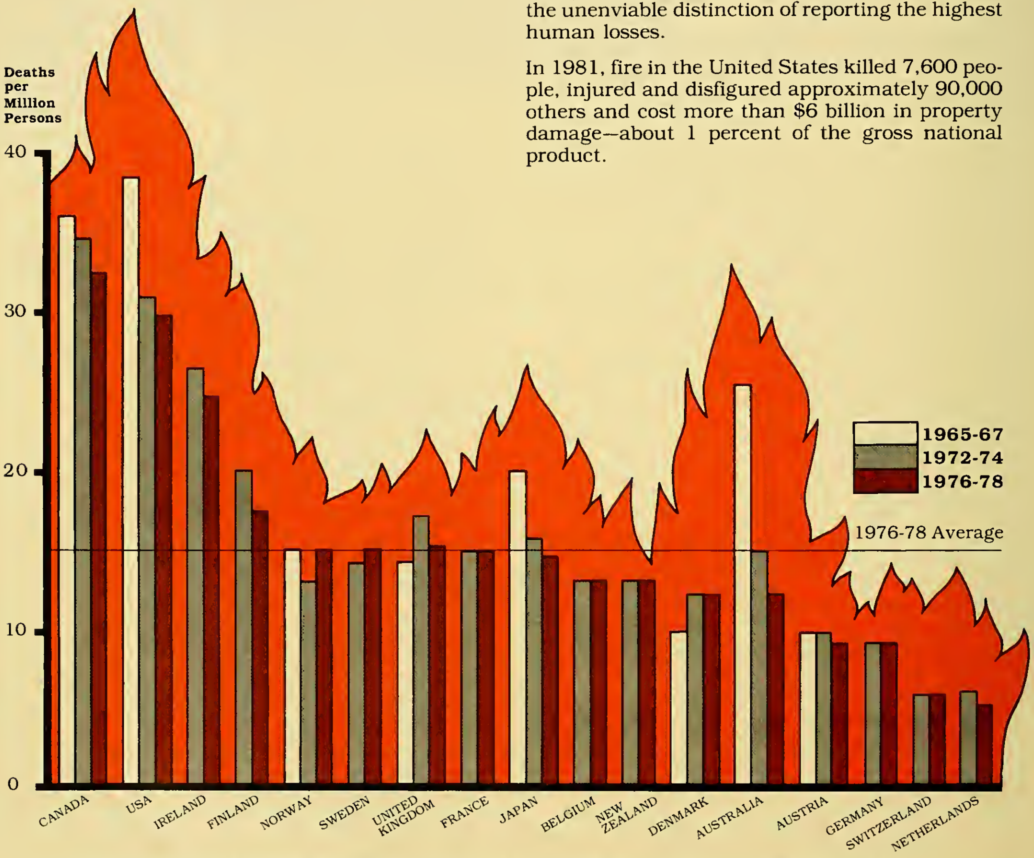
**FACT:** There are numerous cost-saving benefits from sprinkler systems in construction code options and insurance discounts which usually offset the cost of installation.

- Insurance company discounts for automatic sprinkler systems in commercial buildings allow system payback in as little as three or four years.
- A National Bureau of Standards study shows that net savings are possible through use of sprinklers by permitting changes in building operations, maintenance, repairs and reduced insurance costs.

**FACT:** Use of quick-response automatic sprinkler systems in conjunction with smoke detectors can obviate concerns about toxicity of smoke generated in fires because fires can be detected and extinguished before carbon monoxide and other toxic gasses reach lethal levels.

NETCLAC40

**INTERNATIONAL FIRE DEATH RATE—INDICES (EXCLUDING TRANSPORTATION)**



*Source: Federal Emergency Management Agency, "Fire in the United States"; 1982 Edition, FEMA-22, p. 25.*

# Grim Statistics

The United States continues to have one of the worst fire death records of the industrialized world, vying with Canada during the last two decades for the unenviable distinction of reporting the highest human losses.

In 1981, fire in the United States killed 7,600 people, injured and disfigured approximately 90,000 others and cost more than $6 billion in property damage—about 1 percent of the gross national product.

# Why So High?

The U.S. fire death rate is high because the number of fires is high. The way to reduce death is to stop fires, and many fire experts agree that the most effective way to minimize casualties is through the use of automatic sprinklers and smoke detectors.

# How Fire Kills

Deaths occur most frequently when fires rage out of control and occupants are unable to escape. The majority of these deaths occur in homes.

- In 1981, residential fires accounted for 80 percent of fire deaths, 65 percent of injuries and 46 percent of property loss. This most common residential fire scenario is ignition of upholstery or mattresses by cigarettes. Historically, in the majority of these cases, the smoker also has been drinking.
- The victims have been disproportionally children, the elderly and those who were unable to escape on their own even if a smoke detector sounded the alarm.
- The primary cause of all fire deaths is smoke—not heat or flame. Smoke always contains carbon monoxide which can be lethal. Smoke also can impede escape if it develops quickly enough to obscure routes to safety.

## CLINICAL CAUSES OF DEATH

**STATE OF MARYLAND, 1972-77**

| Category | Cause | % of Deaths |
|---|---|---|
| 1 | burns | 18 |
| 2 | carbon monoxide alone (COHb $\geq$ 50%) | 48 |
| 3 | carbon monoxide + other factors (30-50% COHb + cyanide and/or heart disease) | 16 |
| 4 | heat and carbon monoxide not significantly involved | 18 |
| | | 100 |

## FACTORS RESPONSIBLE FOR FAILURE TO ESCAPE FROM FIRES

**STATE OF MARYLAND, 1972-77**

| Reason for Failure to Escape | Attempt to Escape | | | Total | % |
|---|---|---|---|---|---|
| | Yes | No | Undetermined | | |
| Carbon Monoxide Alone | 23 | 6 | 3 | 32 | 29.9 |
| Carbon Monoxide + Alcohol | 31 | 6 | 0 | 37 | 34.6 |
| Alcohol Alone | 3 | 0 | 0 | 3 | 2.8 |
| Burn (including respiratory) | 5 | 0 | 0 | 5 | 4.7 |
| Coronary Occlusion | 2 | 1 | 0 | 3 | 2.8 |
| Infant | 1 | 12 | 0 | 13 | 12.1 |
| Invalid | 1 | 3 | 0 | 4 | 3.7 |
| Explosion | 0 | 3 | 0 | 3 | 2.8 |
| Clothing Fires (generally suicides) | 2 | 3 | 0 | 5 | 4.7 |
| Suicide | 0 | 1 | 0 | 1 | 0.9 |
| Car Accident | 0 | 0 | 1 | 1 | 0.9 |
| **Totals** | **68**<br>(63.6%) | **35**<br>(32.7%) | **4**<br>(3.7%) | **107** | |

*Source: Berl, V. and Halpin, B., "Human Fatalities From Unwanted Fires"; National Bureau of Standards grant/contract report NBS-GCR 168, p. 57 1979.*

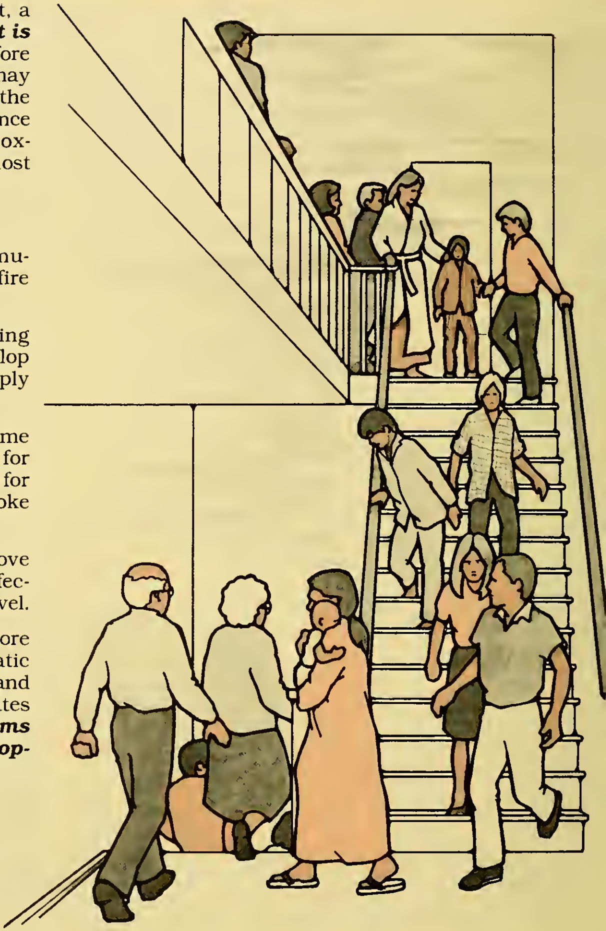
Fire experts agree that to minimize fire threat, a fire must be detected and suppressed ***while it is still small.*** Fire may smolder for hours before bursting into flame, but, once flame appears, it may take only ***two minutes*** for a fire to spread to the contents, walls and ceilings of an entire room. Once that has happened, heat, flames or carbon monoxide will kill every occupant of the room almost immediately.

What can the nation do?

- Allocate additional funds from strained municipal budgets for bigger, more numerous fire stations?
- Pass additional Federal regulations requiring industry to do the impossible; i.e., develop building materials and furnishings that simply ***will not burn?***
- Require home inspections, as is done in some European countries, and penalize people for permitting fire hazards in their homes or for failing to maintain the batteries in their smoke detectors?

Such attempts to reduce fire losses might prove not only difficult to implement but largely ineffective in reducing fire losses below their current level.

Experience and testing now show that a far more effective step would be to install automatic sprinklers and smoke detectors in all buildings and residences. A Chicago fire consultant estimates that ***these combined fire protection systems would reduce injuries, loss of life and property damage by at least 50 percent.***



# The Proven Fire Suppressant– Automatic Sprinkler Systems

The way to reduce fire deaths and losses is to prevent fires. Once a fire starts, most fire experts agree that the most effective way to minimize fire deaths and losses is through the use of both automatic sprinklers and smoke detectors.

Automatic sprinkler systems have been in use in the United States since 1874, and their record for extinguishing fires, saving lives and protecting property is outstanding.

Automatic sprinklers were first introduced in commercial buildings to protect property. In the last two decades, building codes have increasingly called for the installation of sprinkler systems in certain types of buildings—not merely to protect property—but to save lives.

Today, with the development of quick-response sprinkler heads which can be installed using traditional metal or new plastic piping, automatic sprinkler systems can be installed at reasonable cost in existing buildings and new construction including health-care facilities, offices, public buildings, condominiums, multi-family dwellings, hotels, motels, one- and two-family residences and mobile homes.

***New technology offers inconspicuous, quick-response sprinkler heads that blend into a room's decor. Coupled with early warning smoke detectors, these devices provide maximum fire protection to life and property.***

> “. . . *The residential sprinkler system, working off the domestic water supply, is probably the ultimate answer to residential fire protection.*”
>
> **Harry Shaw**
> **former Acting Administrator**
> **U.S. Fire Administration**

# An Enviable Record

Excluding deaths caused by explosion or flash fire, ***there are no known occurrences of multiple loss of life in a fully sprinklered building due to fire or smoke.*** Sprinklers are the most reliable and effective fire protection system known.

- In an 82-year period in Australia and New Zealand (where mandatory fire records are kept), only one person died in a sprinkler-protected residential or institutional building as a result of burns or asphyxiation, giving sprinklers a 99.7 percent rating for efficacy and reliability.
- The National Fire Protection Association reports a 96.2 percent success record for sprinklers used from 1925 through 1969.
- In 1,648 fires in New York City highrises between 1969 and 1978, sprinklers were over 98 percent effective in suppressing and extinguishing fires.
- The U.S. Department of Energy reports no loss of life in 115 fires from 1952 through 1980 in sprinkler-protected facilities of all types. Property loss was ⅕ that experienced in non-sprinklered buildings.

## COMPARISON OF DAMAGE COSTS:

### Cobb County Living Room Test

**If Unsprinklered and Considered a Total Loss:**

| | |
|---|---|
| Remove debris | $ 350.00 |
| Replace interior structural including studs, trim, window and door units | 980.00 |
| Carpet and pad | 406.00 |
| Ceiling insulation | 76.80 |
| Paint and wall coverings | 168.96 |
| Exterior structural including joists, rafters, sheathing and shingling | 2,311.35 |
| Paint exterior, replace wall insulation and electrical work | 964.00 |
| Paint 3 openings | 15.00 |
| Replace gutter | 119.00 |
| Total labor and materials | 5,391.11 |
| 20% overhead and profit | 1,078.22 |
| **Total damage estimate** | **$6,469.33** |

**Water and Fire Damage Combined in Sprinklered Test:**

| | |
|---|---|
| Remove debris | $ 75.00 |
| Carpet and pad | 597.24 |
| Sheetrock repair | 125.00 |
| Clean and paint walls and coverings | 230.40 |
| Clean windows | 10.00 |
| Paint openings | 22.50 |
| Total labor and materials | 1,060.14 |
| 20% overhead and profit | 212.28 |
| **Total damage estimate** | **$1,272.42** |

**A Savings of more than 80%**

### Cobb County Kitchen Test

**If Unsprinklered and Considered a Total Loss:**

| | |
|---|---|
| Remove debris | $ 700.00 |
| Interior structural including walls and ceiling, studs, window and door units, paint and finish walls and ceiling | 890.10 |
| Replace floor covering | 348.00 |
| Replace stove, vent and hood, electrical, cabinets and plumbing | 1,832.00 |
| Exterior structural including joists, rafters, siding and sheathing, shingles and painting | 2,825.35 |
| Paint openings | 15.00 |
| Replace gutters | 118.00 |
| Total labor and materials | 6,728.45 |
| 20% overhead and profit | 1,345.69 |
| **Total damage estimate** | **$8,074.14** |

**Water and Fire Damage Combined in Sprinklered Test:**

| | |
|---|---|
| Remove debris | $ 75.00 |
| Repair and replace vinyl floor covering | 348.00 |
| Clean and paint wall and ceiling | 230.40 |
| Refinish cabinets | 133.00 |
| Clean counter top | 45.00 |
| Replace vent hood | 110.00 |
| Clean stove | 16.00 |
| Paint openings | 25.00 |
| Repair sheetrock and wall | 75.00 |
| Repair cabinets | 22.50 |
| Total labor and materials | 1,079.90 |
| 20% overhead and profit | 215.98 |
| **Total damage estimate** | **$1,295.88** |

**A Savings of almost 84%**

*Source: Cobb County, GA*

Sprinklers save lives and minimize property damage because:

- They operate automatically in the area of fire origin, preventing a fire from growing undetected to a dangerous size. Also, commercial sprinkler systems simultaneously will sound an alarm.
- They keep fires small and prevent the fast-developing fires of intense heat which are capable of trapping and killing dozens of building occupants.
- By eliminating flame and smoke, they immediately reduce the danger of burns and carbon monoxide poisoning, thus saving the lives of those who may be physically unable to escape.
- When coupled with an approved detector, they provide early warning of fires.

Tests of newly developed, quick-response sprinkler systems designed for use in single-family homes, multi-unit dwellings and mobile homes in a variety of typical home fire scenarios showed that the sprinkler heads responded in as little as 35 seconds, completely extinguished each blaze, kept carbon monoxide and temperatures to nonthreatening levels and resulted in minimal fire and water damage. These tests indicate that in fully sprinklered buildings, automatic sprinkler systems can be expected to effectively extinguish or control fires.

## UNSPRINKLERED BUILDING FIRES

| Date | Location | Deaths |
|---|---|---|
| Jan. 9, 1970 | Harmer House Convalescent Home, Marietta, OH | 21 |
| Dec. 20, 1970 | Pioneer Hotel, Tucson, AZ | 28 |
| Jan. 14, 1971 | Westminster Terrace Presbyterian Home for Senior Citizens, Buechel, KY | 9 |
| Oct. 19, 1971 | Nursing Home, Honesdale, PA | 15 |
| Jan. 16, 1972 | Hotel, Tyrone, PA | 12 |
| Nov. 30, 1972 | Baptist Towers, Atlanta, GA | 11 |
| June 24, 1973 | Cocktail Lounge, New Orleans, LA | 32 |
| Nov. 15, 1973 | Stratford Apartments, Los Angeles, CA | 24 |
| June 30, 1974 | Gulliver's Discotheque, Port Chester, NY | 24 |
| Aug. 27, 1974 | Washington House Hotel, Berkeley Springs, WV | 12 |
| June 9, 1975 | Seminole County Jail, Sanford, FL | 11 |
| Dec. 18, 1975 | Wincrest Nursing Home, Chicago, IL | 24 |
| Jan. 10, 1976 | Pathfinder Hotel, Fremont, NE | 20 |
| Jan. 30, 1976 | Blue Angel Night Club, New York, NY | 7 |
| Oct. 23, 1976 | Puerto Rican Social Club, Bronx, NY | 25 |
| May 28, 1977 | Beverly Hills Supper Club, Southgate, KY | 165 |
| June 26, 1977 | Maury County Jail, Columbia, TN | 42 |
| Oct. 24, 1977 | Cinema Follies, Washington, DC | 9 |
| Dec. 13, 1977 | Aquinas Hall, Providence College, Providence, RI | 10 |
| Jan. 28, 1978 | Coates House Hotel, Kansas City, MO | 20 |
| July 31, 1979 | Holiday Inn, Cambridge, OH | 9 |
| July 26, 1980 | Brinley Inn, Bradley Beach, NJ | 23 |
| Nov. 21, 1980 | MGM Grand Hotel, Las Vegas, NV | 85 |
| Dec. 4, 1980 | Stouffers' Inn, Harrison, NY | 26 |
| Feb. 10, 1981 | Las Vegas Hilton, Las Vegas, NV | 8 |
| March 6, 1982 | Westchase Hilton, Houston, TX | 12 |
| June 14, 1983 | Ramada Inn Central, Fort Worth, TX | 5 |

*Source: National Fire Sprinkler Association, Inc.*

***The world-renowned Hotel del Coronado—a wood frame structure built nearly a century ago near San Diego—has a complete automatic fire sprinkler system and an outstanding fire safety record. The original system was installed in 1917, and the main building now has over 30,000 sprinkler heads. The hotel has had only four fire incidences to which the fire department responded. These fires were contained and extinguished by the automatic sprinkler system.***

***The twin towers of the World Trade Center in New York, each 210 floors, are being retrofitted with sprinklers. Work is expected to be completed in 1984 at a cost of more than $50 million. There have been several fires in the World Trade Center since it opened in 1970. Sixteen new highrise buildings have been constructed in New York City since 1980. All but one have complete sprinkler systems.***

*Photo: N.Y. Convention & Visitors Bureau*

# Building Codes and Fire Protection

The four model building codes recognize the value of sprinklers in buildings where rapid evacuation of occupants is difficult or the hazard posed by the contents is high. In certain cases, installation of sprinklers is required as follows:

- Throughout all buildings higher than 150 feet.
- In health-care facilities such as hospitals and nursing homes (portions of hospitals can be exempted if early warning smoke detectors are installed throughout.)

Some federal agencies, states and municipalities are going even further than the model building codes to require sprinkler installation. Thirty-four states allow local jurisdictions to adopt regulations which exceed or modify state requirements for automatic sprinkler systems.

- Since 1977, the Veterans Administration has required all its new hospitals, nursing homes and related residences to be fully sprinklered.
- The General Services Administration demands that all Federal buildings six stories or higher be protected by automatic sprinklers.

- The U.S. Department of Housing and Urban Development's minimum property standards require automatic sprinklers in selected areas of multi-family housing, and in nursing homes and housing for the elderly. HUD also requires electronically supervised smoke detectors in patient rooms of nursing homes and single-station smoke detectors near bedrooms of living units within residential buildings.
- Several states require sprinklers in all new buildings exceeding a specific height.
- A number of municipalities require sprinklers throughout all new buildings exceeding 1,000 square feet in area (except single-family dwellings).
- Many progressive communities require, or are considering requiring, automatic sprinkler systems in one- and two-family dwellings and condominiums.

# The Arguments Against Sprinklers

Given their proven effectiveness, why are sprinklers not installed everywhere? Arguments typically offered by those who question the installation of sprinklers include:

### Some people say . . .

"The sprinklers may go off accidentally."

### But, in fact,

Loss records of Factory Mutual Research show that the probability of a sprinkler discharging accidentally due to a manufacturing defect is only 1 in 16,000,000 sprinklers per year in service.

### Some people say . . .

"If one sprinkler head goes off, they all go off. Then you've really got a mess."

### But, in fact,

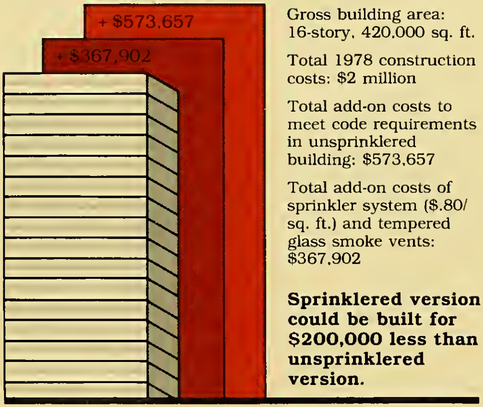
Sprinkler heads are designed to react to temperatures in each room individually. Normally, only the sprinkler over the fire will activate. Data show that in residential scenarios, usually one

> *". . . Firefighters all agree that (automatic sprinkler systems) are one of the most effective means of extinguishing fires early . . . . Together with early warning systems, they provide the most effective life safety measure in the event of fire."*
>
> **James Kohler**
> **Deputy Fire Commissioner**
> **City of New York**

***The sprinkler and smoke detector both quickly activated when a dropped cigarette ignited the chair (foreground) in this ninth-floor room of a Phoenix, Arizona, home for the elderly. Several hundred elderly and semi-mobile residents were in the 18-story building at the time. There were no injuries, no need for vacating and no significant smoke or damage to the building since the burning chair was extinguished quickly by the recently installed sprinkler system.***

*Photo: Bruce H. Varner, Phoenix Fire Department*

### HIGHRISE OFFICE BUILDING



Gross building area: 16-story, 420,000 sq. ft.

Total 1978 construction costs: $2 million

Total add-on costs to meet code requirements in unsprinklered building: $573,657

Total add-on costs of sprinkler system ($.80/ sq. ft.) and tempered glass smoke vents: $367,902

**Sprinklered version could be built for $200,000 less than unsprinklered version.**

*Source: National Fire Sprinkler Association, Inc.*

sprinkler will control a developing fire; in large buildings, as few as three sprinklers will do the job.

## Some people say . . .

"They cause water damage."

## But, in fact,

Tests conducted by a Los Angeles Fire Department under the auspices of the U.S. Fire Administration showed that damage caused by water in a sprinklered situation is substantially less than damage caused by fire department hose streams in an identical unsprinklered situation and far less than damage caused by a fire which escapes early detection and suppression.

## Some people say . . .

"Sprinklers are just too expensive to install."

## But, in fact,

. . . with the development of quick-response sprinkler systems which can be supplied by a home's domestic water supply, a 2,000 square-foot home under construction can be protected today by a system costing as little as $1,500 to $2,000 and an older home of comparable size can be retrofitted for about 50 percent more.

More importantly, there are numerous cost-saving benefits of sprinkler systems in construction code options and insurance discounts which in most cases are equal to or even greater than the original cost of installation.

# Automatic Fire Suppression Incentives and Options

## Insurance Discounts

Insurance companies have long recognized the property protection features of automatic sprinklers and have provided premium reductions for commercial properties that allow system payback in as little as three or four years.

These same discounts are beginning to apply to private residences as well. The Homeowner's Committee of the Insurance Services Office has recommended that discounts up to 15 percent be applied to the entire homeowner policy premium for single-family residences protected throughout with residential sprinklers and smoke detectors. In fact, 38 states allow such reductions in premium costs.

## Construction Options

Most building codes permit states to modify or substitute certain other fire safety requirements if smoke detectors and automatic sprinklers are installed. Such options can result in considerable savings during construction or renovation. For example, the National Bureau of Standards, in a life-cycle cost study, has shown that net savings can be achieved through the use of sprinklers by permitting changes in building operations, maintenance, repairs and insurance costs.

**CASE STUDIES OF INSURANCE SAVINGS ON SPRINKLERED PROPERTIES**

| Property | Insurance Before Sprinklers | Insurance After Sprinklers | Sprinkler System Cost | Annual Savings | Sprinkler System Amortization |
|---|---|---|---|---|---|
| Food Processing Plant | $308,377 | $ 7,709 | $177,100 | $300,668 | 7 months |
| Metal Stamping Plant | $ 74,000 | $11,843 | $ 69,753 | $ 62,157 | 13 months |
| Supermarket | $ 3,350 | $ 1,173 | $ 7,611 | $ 2,227 | 3-¼ years |
| Country Club | $ 52,500 | $11,100 | $ 21,250 | $ 41,400 | 6 months |
| Restaurant | $ 5,820 | $ 786 | $ 15,815 | $ 5,034 | 3 years |
| Carpet Manufacturing Plant | $ 30,780 | $ 6,156 | $ 64,790 | $ 24,624 | 2-½ years |
| Paint Warehouse | $ 26,300 | $ 6,575 | $ 52,300 | $ 19,725 | 2-½ years |
| Shopping Center | $ 19,850 | $ 5,955 | $ 62,196 | $ 13,895 | 4-½ years |
| Nursing | $ 10,200 | $ 5,610 | $ 24,200 | $ 4,590 | 5 years |

*Sources: Phillips and Company, Grinnell Fire Protection Systems Co., Inc.*

## Special Community Incentives

To encourage installation of sprinkler systems in all types of buildings and dwellings:

- The State of Alaska set a legislative precedent with a law enacted in 1981 providing a two percent reduction of the assessed value (for tax purposes) of any structure protected by a sprinkler system. It is also providing loans through the Small Business Loan Program at low interest rates to property owners who wish to install sprinklers.
- New Jersey, which requires mandatory sprinkler installation in residential care facilities, is providing low-interest loans to owners to assist with installation costs.
- Fresno, CA, will underwrite loans to retrofit existing commercial, industrial, office or recreational buildings with automatic sprinkler systems.
- Federal and some state legislatures are considering investment tax credits of up to 20 percent for installing sprinklers.
- Some municipalities are considering reducing tax assessments four to five percent in sprinklered buildings.

### COBB COUNTY, GEORGIA BUILDING CODE REQUIREMENTS

| **Without Residential Fire Sprinklers** | **With Residential Fire Sprinklers** | **Savings/Advantage** |
|---|---|---|
| Tenant separation walls must be made of ⅝″ Type X Fire Rated gypsum wallboard. | ½″ standard gypsum wallboard may be substituted. | $23.00 per 1,000 sq. ft. |
| ⅝″ Type X Fire Rated gypsum wallboard and ¾″ plywood must be used in one-hour floor/ceiling assemblies. | ½″ standard gypsum wallboard and ⅝″ plywood may be substituted in floor/ceiling assemblies. | $55.00 per 1,000 sq. ft. |
| Fire stops are required in the attic at every unit. | Fire stops in attic required every 3,000 square feet. | $123.00 each fire stop |
| Maximum tenant travel to a fire exit must not exceed 20 feet. | Exits may exceed the maximum required travel from a tenant with one exit and may be exceeded by 15 feet for a maximum travel of 35 feet. | Design Freedom |
| Tenants may not travel by other tenants' doors unless those doors are ¾ hour fire rated doors in 20 minute frames with 3 U.L. listed spring hinge closers. | Standard doors and frames with no closers may be used. | $111.70 each door |
| One hour rating on walls and doors of hazardous areas. | No one-hour rating of walls and doors of hazardous areas. | $23.00 per 1,000 sq. ft. (walls)<br>$111.70 each door |
| All buildings must have a 4-hour masonry wall every 6,000 square feet. | Only a 2-hour wall is required at 8,000 square feet and 4-hour wall not required until 10,000 square feet. | $8,345 each 4-hour wall<br>Note: Cost of 2-hour Sheetrock Wall—$750.00 |
| Buildings must be placed on property to not exceed 50′ from paved parking area for aerial rescue operations. | Buildings allowed up to 100′ from street or parking area. This allows freedom in design as well as being able to place building in more esthetic surrounding. | Design Freedom |

*Source: Cobb County, GA*

# Beyond the Obvious: Advantages to the Community or Muncipality

In addition to drastically reducing lives and property loss due to fires, automatic sprinkler systems:

- Decrease the economic and physical burden on the fire department; a particularly important feature as communities across the country build more cluster-home developments and increase the threat of a multi-dwelling disaster.
- Decrease the risk to firefighters by controlling fires at "safer" levels.
- Lessen the necessity of building expensive new fire stations to meet the needs of revitalized downtown areas and sprawling suburban developments.
- Decrease fire insurance costs for the city.
- Save billions of gallons of processed water used in fighting fires by conventional means.
- Increase a community's total fire protection security.

***Dangerous situations such as this can most often be prevented through the use of sprinkler systems and early warning smoke detectors. Due to new technology in sprinklers and piping, it is now economically feasible to retrofit older highrise buildings.***

*Photo: James Parcell, Washington Post*

> *. . . The best way to reduce fire loss or loss of life due to fires is in building codes and fire ordinances, built-in fire extinguishing systems or built-in early warning detection systems. They can do a better job than any fire fighter . . . .*
>
> **Chief Vernard E. Rogers**
> **Houston Fire Department**

# The Advantages to You

The economic benefits of automatic sprinkler systems and smoke detectors flow not only to those responsible for the nation's fire safety, but to all segments of the population. Consider the following:

## If you are an architect:

Automatic sprinkler systems, by allowing more construction options, permit more freedom in designing building compartments, exit distance spacing, exit travel distance and exterior building surfaces. Make building developers and owners aware of these options which afford considerable cost savings as well as greater protection of life and property.

## If you are a builder or developer:

Numerous studies are available showing the construction cost savings in buildings and residences protected by automatic sprinkler systems. Such savings can make your bids more competitive and your structure safer and more valuable. Combined with insurance premium reductions, construction cost savings can pay back sprinkler installation expenses within months.

## If you are a code official:

Fire data from the last century and from recent tests have shown that automatic sprinkler systems used in conjunction with smoke detectors are by far the most effective measures for minimizing fire threat and reducing loss of life and property damage. Develop and enforce codes that require these on-site fire protection systems in all public buildings and housing.

## If you are a member of Congress:

Automatic sprinklers and smoke detectors are proven lifesavers and property protectors and can relieve local jurisdictions of some of the financial burden of protecting residents from fire. Support federal tax incentives and regulations requiring on-site fire protection systems in all federal and public-use buildings.

## If you are a firefighter or fire official:

Automatic sprinklers reduce the risk of injury or loss of life by keeping fires small. They allow greater distances between fire stations and residential areas requiring protection and permit scarce

> *"The sprinkler/detector alternative produces the best results for all categories of loss (fatalities, injuries and property loss), as the strengths of both sprinklers and detectors are combined in a complementary, although not directly additive manner."*
>
> **NBS report, NBSIR 82-2551,**
> **"Evaluating Alternative Strategies for Reducing Residential Fire Loss—The Fire Loss Model."**

budget dollars to be invested in currently existing fire facilities and staff rather than in the construction of additional stations. Support your local legislators and code officials in encouraging the installation of automatic sprinklers and smoke detectors in ***all*** buildings in your community.

## If you are a homeowner:

Fire breaks out in one out of ten American homes each year. In addition to assuring the safety of your family and home, sprinklers and smoke detectors are a low-cost, reliable option that will increase the resale value of your home and may result in considerable reduction of your home insurance premiums. Consider installing automatic sprinklers in a new home or retrofitting your existing home.

## If you are an insurance underwriter:

Years of performance and recent tests have shown that in buildings protected by automatic sprinklers and smoke detectors, fire-produced property damage is reduced to as little as ⅕ what it would be in an unsprinklered building. Extend premium reductions, which have applied for years in commercial properties, to homeowner policies where owners have installed on-site fire protection systems.

## If you are a state, county or municipal legislator:

As noted on the previous page, the economic advantages of community-, county-, or state-wide installation of smoke detectors and automatic sprinkler systems are enormous. At a minimum, support the enforcement of model building codes as they pertain to automatic sprinklers and smoke detectors. Encourage counties and municipalities to develop their own codes, where permitted, which exceed the requirement of the national codes concerning these protection systems. Eliminate or prohibit monthly utility charges to building owners for merely having an automatic sprinkler system connected to the public water supply. Support real estate tax incentives and credits for homeowners and building owners alike.

> “*Sprinkler systems are the answer to today's fires. Unfortunately, only two percent of America's 58,000 hotels and motels are protected with sprinklers throughout the structure.*”
>
> **Donald Flinn**
> **General Manager**
> **International Association**
> **of Fire Chiefs**

# Hotel-Motel Fire Safety

## Pre-Planning

When making a reservation, ask if the hotel or motel is equipped with a sprinkler system or at least has smoke detectors in the rooms.

Count the number of doors down the hall from your room in both directions to the nearest fire exit staircases. Elevators should **NEVER** be used in the event of a fire.

## Fire in the Room

If a fire starts in the room, leave the room and close the door to keep the fire from spreading.

**DO NOT USE ELEVATORS**

## Fire in the Building

Once alerted that there is a fire somewhere in the hotel or motel, follow the posted emergency instructions.

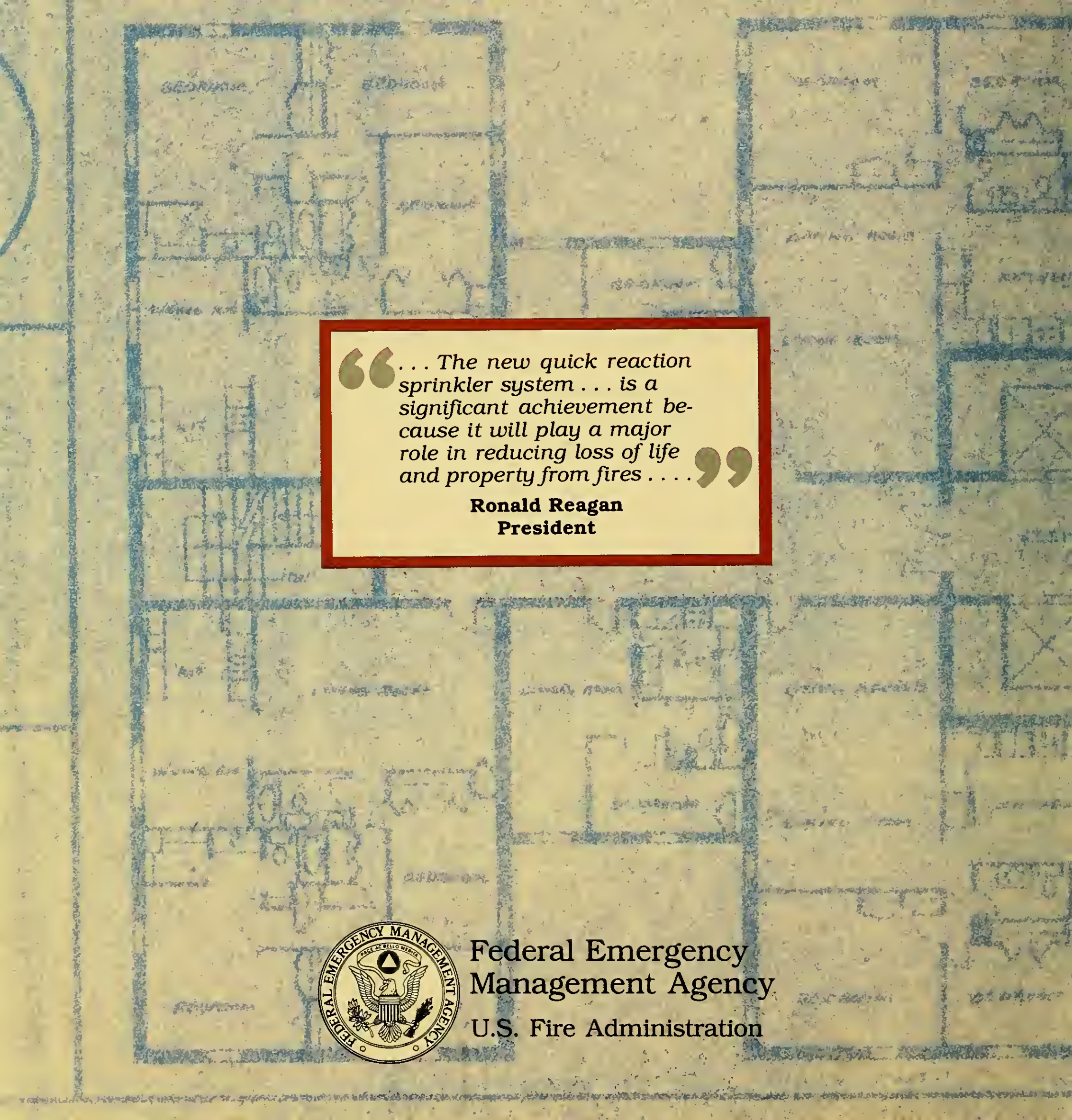
To determine if it is safe to leave the room, take the key and go to the door. If the door feels cool, open the door a crack. Be ready to close the door if hot air, smoke or flames rush through the crack.

If the hall is hazy with smoke, **crawl** down the hallway counting the doors to the nearest stairway exit. If it is not possible to reach the exit, turn around and count the doors to get back to the room.

## Trapped in the Room

If it is unsafe to leave the room during a fire, follow these precautions:

- Stuff wet towels or clothing under and in the sides of the room door to keep the smoke out.
- Close as many doors leading to the fire as possible.
- If possible, open a window. Hang a sheet or bedspread outside to signal help.
- If the room gets smoky, stay low.



> *. . . The new quick reaction sprinkler system . . . is a significant achievement because it will play a major role in reducing loss of life and property from fires . . . .*
>
> **Ronald Reagan**
> **President**

Federal Emergency
Management Agency
U.S. Fire Administration